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TRANSLATOR'S AFFIDAVIT

I, Andrew M. Wilford, a citizen of the United States of America, residing in Dobbs Ferry, New York, depose and state that:

I am familiar with the English and German languages;

I have read a copy of the German-language document attached hereto, namely PCT Application PCT/EP2004/009097 published as WO 2005/018827; and

The hereto-attached English-language text is an accurate translation of the above-identified German-language document.

Andrew M. Wilford

Sworn to and subscribed before me
9 February 2006

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RELEASE-AGENT APPLICATOR

The invention relates to a release-agent applicator for the belt of a continuous-throughput press.

Such a release-agent applicator is known where an applicator roller is pressed against a press belt where it passes over a deflecting roller to apply release agent to the press belt. The release agent prevents cooking of the pressed material onto the press belts in the work area of the continuously running press. Such a continuous-throughput press has an upper and a lower endless belt which are each typically made of steel and supported in the working region on rollers on heated platens so that pressure and heat can be transmitted through it to the material being pressed. With the known release-agent applicators the release agent is sprayed through a manifold pipe on the applicator roller. Such spraying is a problem because on the one hand it does not ensure uniform application of the release agent to the press belt and on the other hand it creates a cloud of spray that is environmentally deleterious and that normally requires that specific protective measures be taken (EP 0,642,841).

In addition a device is known for coating metal belts with for example a plaster or lacquer layer, this coater generally comprising a doctor-blade chamber, a dosing roller, and an applicator roller. The doctor-blade chamber, dosing roller, and applicator roller are adjustable independently of one another (see

DE 195 42 097). This development has no bearing on the actual construction of the applicator.

Finally a device is known for applying fluent media to a web or roller by means of a dip or transfer roller and an applicator roller. The applicator roller is comprised at least partially of magnetizable material, has no axis, and rolls on the transfer roller and is movable relative to the point of application (see WO 87/01308).

It is an object of the invention to provide a release-agent applicator of the above-described type by means of which a dosed and thoroughly uniform application of the release agent on the press belt is achieved, and that is environmentally friendly and not impractical.

The invention attains this object with a release-agent applicator for a moving (over a deflecting drum) press belt of a continuous-throughput press, having an applicator roller pressable against the belt (adjacent the deflecting drum), a dosing roller pressable against the applicator roller and sitting in a release-agent bath, actuators for adjustably positioning the dosing roller relative to the applicator roller and the applicator roller relative to the belt with a pressure determined by the amount of release agent to e applied to the belt, and control means for regulating the pressures depending on the required amount of release agent. The applicator roller transfers the release agent

to the belt, which normally is a steel or mesh belt. The amount of transferred release agent is determined by the extent of surface contact between the dosing roller and applicator roller and between the applicator roller and the belt and thus depends from the pressures applied so that changing the pressures applied varies the release-agent application or the amount transferred. Thus for example when a thin coating is needed to make thin pressed product, a large roller-contact area and correspondingly large pressure is needed while oppositely when a thick coating is needed for the production of thick pressed product a small roller-contact area and corresponding small pressure is needed. In both cases it is possible to accurately dose and uniformly control the coating of release agent. In addition such a release-agent applicator is environmentally friendly and eliminates the need for special protective measures.

Further inventive features are described below. Thus the applicator roller has a compressible outer layer, for example is formed as an elastomer-coated roller, in order to achieve an optimal release-agent transfer. The same is true also for the dosing roller that can be a raster roller, for example having a structured outer surface so as to perfectly apply the release agent to the applicator roller. According to the pattern of the bumps on the raster roller it is also possible to influence the liquid pickup. Independently it is also possible to provide the dosing roller with a predosing doctor blade and the applicator roller if necessary with a dosing doctor blade so that excess release agent

can be scraped off. Furthermore according to the invention the pressure applied by the applicator roller and/or the dosing roller is monitored by pressure sensors, pressure bolts, pressure measurers, or pressure cans and passed as digital or analog signals through amplifiers to the control means. The positions of the rollers, for example the active and inactive positions of the applicator roller and of the dosing roller, are monitored and reported by initiators, pressure switches, and/or end switches. Also in accordance with the invention the applicator roller and the dosing roller are movable, e.g. pivotal, by piston-cylinder units, e.g. pneumatic actuators as positioning apparatus into their positions. Thus for example a pressure switch can produce an output when there is enough pneumatic pressure available for control. The position of the dosing roller with respect to the applicator roller and to the applicator roller relative to the press belt can be determined for example indirectly by measuring the pressures they exert. To this end the roller actuator can be provided with a pressure sensor. The control of the applied pressure is done by means of a proportional valve that controls the pressure of the pneumatic cylinder. The controller takes into account a maximum level for the applied pressures. This maximum level is then split up into right- and left-end signals for the applicator roller and for the dosing roller. According to the invention the applicator roller and the dosing roller are driven synchronously with respect to each other and to the belt in order to prevent premature wear and damage to the roller surfaces.

According to the invention it is possible for the applicator roller or the working roller and the dosing roller or its support to be independently pivotal on a frame. According to a preferred embodiment the applicator roller is rotatably mounted on a support that is pivotal on at least one frame and the dosing roller is rotatably mounted on at least one respective support that is pivotal on the applicator-roller support. In this manner the settings are interrelated in order in particular to be able to control the roller pressures reproducible and independently of each other. It is also possible to pivot the two roller ends independently of each other in order to achieve fine control of the applied pressure over their length.

In fact a substantial feature of the invention is the independent adjustability of the supports at the ends of the applicator roller and if necessary at the ends of the dosing roller tin the tenth-millimeter range relative to the steel belt along its width. In order that the positions of the applicator roller and if necessary also of the dosing roller does not cause dislocation with too great a pressure/travel difference, supports at both ends of the applicator roller and if necessary at both ends of the dosing roller support for the dosing roller are interconnected by synchronizing shafts that limit the extent of relative pivoting between the applicator-roller supports and if necessary between the applicator-roller supports. This effect can also be achieved by synchronizing or torque shafts, taking into account a predetermined bearing play with spring biasing.

Finally, the invention proposes that the release-agent bath be provided in a release-agent trough or in a doctor-blade chamber When a doctor-blade system is used it is possible to mount the release-agent bath either underneath the roller horizontally, or laterally of the roller vertically.

The upper press belt as well as the lower press belt of the continuous-throughput press can each have their own release-agent applicator, preferably at the intake end.

The invention is more closely described in the following with reference to only one embodiment with reference to a drawing. Therein:

FIG. 1 is a schematic side view of a continuous-throughput press with a release-agent applicator at its intake;

FIG. 2 is a detail view of the structure of FIG. 1 showing the release-agent applicator for the upper press belt in the inactive position of the dosing roller and applicator roller;

FIG. 3 is the structure of FIG. 1 in the active position of the dosing roller and applicator roller;

FIG. 4 is a variation on the structure of FIG. 3;

FIGS. 5A, 5B, and 5C schematically show the structure of FIG. 4 in different operational positions;

FIG. 6 is a top view of the applicator roller of FIG. 4; and

FIG. 7 is another variant on the structure of FIG. 3.

The drawing shows a continuous-throughput press for making wood panels and having a release-agent applicator 1 for one of two press belts 3 passing over deflecting drums 2. To this end FIG. 1 only shows one release-agent applicator 1 for the upper press belt. In addition (or alternatively) a further (unillustrated) release-agent applicator can be provided for the lower press belt.

The release-agent applicator 1 has an applicator roller 4 that can be set against the press belt 1 for example at the upstream deflecting drum 2 and a dosing roller 6 that can be set against the applicator roller 4 and that is partially immersed in a release-agent bath 5. In addition the release-agent applicator 1 has respective actuators 7 for adjustably pressing the dosing roller 6 against the applicator roller 4 and the applicator roller 4 against the belt 3 with a pressure determined by the amount of release agent to be applied to the belt. In addition there is an unillustrated controller for regulating the pressures in dependence on the required amount of release agent.

The release-agent bath 5 according to FIGS. 2 and 3 sits in a trough 8. The applicator roller 4 has a compressible outer layer 9 and thus is an elastomer-coated roller. The dosing roller 6 has a raster-structured surface. In addition a predosing doctor blade 10 is juxtaposed with the dosing roller 6 and a dosing doctor blade 11 with the applicator roller 4. The pressures applied to the applicator roller 4 and to the dosing roller 6 are determined in this embodiment by pressure sensors and transmitted via

amplifiers as electrical signals to the controller. The illustrated roller positions, that is the active position (FIG. 3) and the inactive position (FIG. 2) of the applicator roller 4 and dosing roller 6 are continuously monitored by initiators, pressure switches and/or end switches. The inactive position of FIG. 2 is also the rest position for the case when the release-agent applicator is not needed, e.g. when production is stopped. For movement from the active to the inactive position it is preferred to first pivot the two rollers 4 and 6 together away from the belt 3 and then pivot the dosing roller 6 away from the applicator roller 4.

The applicator roller 4 and the dosing roller 6 are pivoted by respective piston-cylinder units. e.g. pneumatic actuators 7 into their positions. Servomotors rotate the applicator roller 4 and the dosing roller 6 synchronously with each other and with the press belt 3.

While as shown in FIGS. 2 and 3, the working roller 4 and the dosing roller 6 are movable independently of each other via one or more supports by respective piston-cylinder units 7, FIG. 4 shows an embodiment where the applicator roller 4 is rotatably supported on one or more supports 12 that are pivoted on a frame 13 fixed to a roller support W, while the dosing roller 6 is rotatable on supports 14 that are pivotal on the applicator-roller supports 12. Thus the dosing roller is not completely independently mounted on the base, but is carried on the applicator-roller support 12. The applicator-roller support 12 is thus an L-shaped beam. A

comparison of FIG. 4 with FIGS. 5A, 5B, and 5C also shows how the rollers 4 and 6 are shifted from the active position to the inactive position. To start, the first piston-cylinder unit 7a pivots the applicator-roller support 12 so that the applicator roller 4 and the dosing roller 6 are jointly pivoted back (FIG. 5B). Then actuation of the second piston-cylinder unit 7b pivots back the dosing-roller support 14 without moving the applicator roller 4 (see FIG. 5C).

Furthermore, FIG. 6 is an embodiment where the two ends of the applicator roller 4 are pivotal independently of each other so as to control the applied pressure over its length. To this end the applicator roller 4 is mounted at both ends in pivotal bearings 15. In order to limit the extent of pivoting on the right and left sides, there is a synchronizing shaft 16 that prevents one of the journals 15 from swinging completely out. The same or a similar device can also be provided for the dosing roller 6..

Finally, FIG. 7 shows a variation on the invention where the release-agent bath 5 is in a doctor-blade chamber 17. The dosing roller 6 is partially immersed in the release agent in the chamber and the chamber is defined by two doctor blades 18. The use of a doctor-blade system makes it possible to vary the coating thickness. In this embodiment the doctor-blade unit 17 is underneath the dosing roller 6 and thus extends generally horizontally. In another embodiment it would be possible to arrange the doctor-blade unit vertically so that it is on the side of the dosing roller. This embodiment is not shown in the drawing.